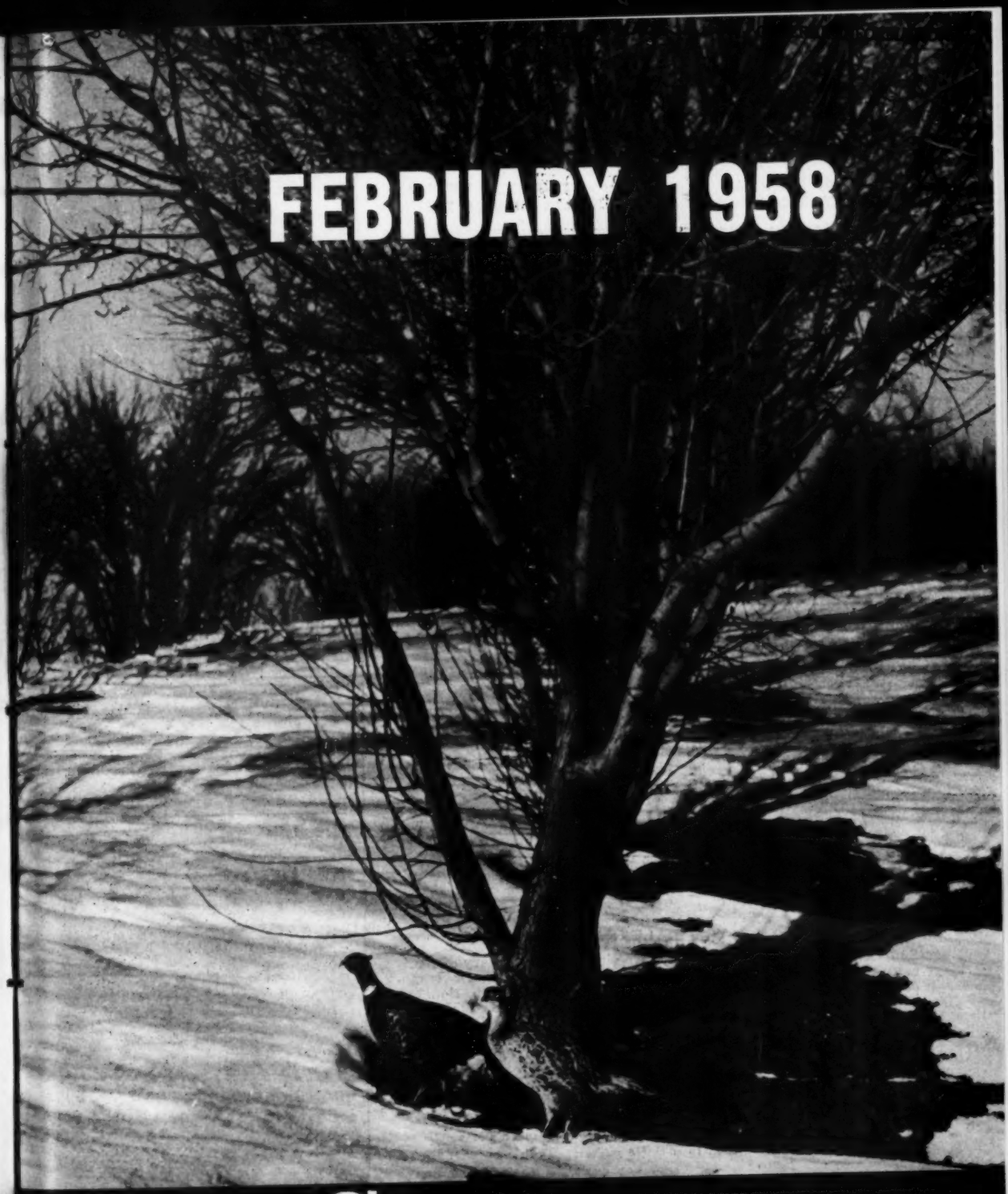


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SOIL CONSERVATION

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SECRETARY OF AGRICULTURE

DONALD A. WILLIAMS
ADMINISTRATOR, SOIL CONSERVATION SERVICE

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U. S. DEPARTMENT OF AGRICULTURE, WASHINGTON, D. C.

★ THIS MONTH ★

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SUMMER READING CLUB.—The Orangeburg Soil Conservation District and the Orangeburg County Library, S. C., sponsor a summer reading club for young people as a part of the conservation-education program. Last summer, 889 boys and girls participated in the program, and read 14,171 books. Each one, who read at least 5 books on conservation and 5 other books of his or her choice received a certificate: 593 certificates were awarded.

In addition to the reading club, three special conservation programs were arranged for the summer. Motion pictures were the main attraction at two of the meetings, while a special conservation tour and picnic was arranged for the third.

—R. H. HOLLEY

Editors are invited to reprint material originating in this magazine.



FRONT COVER.—Pheasants in a farm shelterbelt in the Palouse area of Washington.

—Photo by R. L. Kent

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The Soil Conservation District –

A Unique Tool For Democratic Action

By D. A. WILLIAMS

SOIL conservation districts were conceived a quarter of a century ago as a hopeful experiment in the mechanics of operating a national soil- and water-conservation program. Today, more than 2,750 such districts, blanketing nearly 90 percent of the Nation's farm and ranch land, have emerged as a unique example of successful Federal-State-local cooperation.

Nothing demonstrates this better than facts which turned up recently in a survey to determine how much non-Federal effort is going into the operation of soil conservation districts.

Twenty years ago the soil conservation program was financed almost entirely by Federal funds. This often meant that the Federal Government actually performed much of the needed conservation work on individual farms. The urgency of getting a nationwide job of this dimension underway justified launching it as a Federal program.

Beginning in 1937, soil conservation districts, organized under provisions of State laws, came into operation. They provided a means of insuring local direction and leadership in a program that had to be responsive to the needs and desires of local people.

Except for the gratis services of the farmers and ranchers elected or appointed to serve on district governing bodies, however, district operations at first depended almost entirely on services and facilities provided by the Federal Government.

Today it's quite different.

Technical help is still available to farmers and ranchers from the Soil Conservation Service, through these local units of State government. But a new factor has entered the picture. By 1957, when SCS made a study of the subject, *local and State interests (private and governmental) were contributing at least one-fourth of the annual operating costs of soil conservation districts.* This did not include any part of what individual farmers and ranchers spent in applying conservation measures on their own land. And the trend of local support for districts is clearly upward.

To me, this growing financial support of soil conservation district activities by non-Federal interests means two things:

First, the soil conservation program is getting tremendously effective help that we had not counted on in the early years of the job. Because of it, the Federal funds available for technical assistance are achieving perhaps a third more than would be possible without such support.

Second, soil conservation districts in two decades have thoroughly proved their effectiveness as tools for getting the soil- and water-conservation job done in a democratic way.

It is obvious that these soil conservation districts, run by and for local people, have won the confidence of community, county, and State leaders in government, business, industry, and other segments of our society. These leaders, and the organizations they represent, have discovered that by lending material as well as moral support to soil conservation districts, they are able to speed up conservation accomplishments at the local level and get more benefit from the Federal resources available to them for such work.

Most State governments are appropriating larger and larger sums at each session of their legislatures to help soil conservation districts carry on their work. These appropriations are used mainly to finance the State Soil Conserva-

Note:—The author is Administrator, Soil Conservation Service, U. S. Department of Agriculture, Washington, D. C.

tion Committees (boards or commissions in some States). The committees, in turn, represent the State in program development in soil conservation districts and give administrative guidance to districts. In 1957, these State appropriations approached 5 million dollars.

In addition to the State funds, county and local funds and facilities, made available to districts through local government grants or appropriations and by contributions from business and private sources, amounted in value to at least 20 million dollars in 1957.

In some States, the counties furnish funds, which districts use to rent office space, purchase equipment, or hire clerical help.

In various other ways, local funds contributed by civic and municipal groups, business firms, associations, clubs, and the like are made available in nearly every soil conservation district. These funds are often used in such activities as field days, tours, workshops, and training courses. They pay for awards, prizes, and scholarships; for newsletters, reports, publications, and releases.

There is still another form of private help that is extremely valuable, the dollar-value of which can only be estimated broadly. This includes time, efforts, and expenditures of thousands of citizens who lend personal support to districts because they believe in this approach to an urgent problem.

We can only guess at the tremendous educational value of conservation subject matter in advertising sponsored by local firms in support of soil conservation district programs. A host of soil- and water-conservation activities —contests, awards, and recognition programs —are conducted by farm publications, newspapers, bankers groups, and others.

The officials of soil conservation districts themselves still serve without salary. And because of their interest, they serve also on important committees of State and national associations of soil conservation districts.

This development on the part of State and local interests, while it may have come as a natural consequence of the people understanding and appreciating the importance of soil and water conservation, received some helpful prompting. A few years ago, the National Association of Soil Conservation Districts set out to encourage organized community support of the program. It was called "The Program for Greater Service." The estimates I have cited here are proof enough that this activity has been successful.

We can look forward to still more help from non-Federal sources. In fact, I am convinced that the flow of such assistance has just begun. In some States, legislation has recently been enacted to permit county governments to make funds available to soil conservation districts. The amount of funds appropriated by the States themselves was materially increased during 1957, and we can expect still more help from this source.

Business and industrial firms are constantly on the lookout for ways in which they can give more effective help. There'll be ways for all of them to lend a hand—and a mighty useful hand it will be.

As the soil- and water-conservation program has moved forward, an increasingly large percentage of the total SCS appropriation has gone each year into the costs of supplying trained scientists to soil conservation districts. These technicians take help directly to farmers and ranchers who want to solve their soil and water problems.

The Federal Government cost of these services to farmers and ranchers in soil conservation districts in 1957 was just under 73 million dollars.

We calculate that non-Federal sources in 1957 were providing these same districts with help worth at least 25 millions—more than one dollar of non-Federal funds for every 3 appropriated by the Congress.

This is a bargain American taxpayers are getting for their Federal conservation dollar. It is a development that has come about slowly and that still has far to grow. And only recently have we come to appreciate the full significance of this development to conservation and to effective teamwork between Federal and non-Federal segments of our society.

This is a sign that the soil conservation district movement has come of age. It is fulfillment of the belief and hopes of those who 20 years ago saw in soil conservation districts a great new opportunity for democratic action in the best traditions of our Democracy.

Can You Afford To Let Your Farm Run Down?

By R. H. BLOSSER

AN Ohio study shows that if you let your farm run down you will find it extremely difficult to restore productive capacity unless you are a top grade manager or have extra capital to invest in improvements.

A typical run-down farm in southeastern Ohio was chosen for a 13-year study. The farm included 120 acres used principally for dairying. Soils and topography were roughly representative of about 15 million acres of hill land in southern Indiana, southeastern Ohio, and northern Kentucky. A soil conservation and improvement program was started at the beginning of the study. By the end of the 13-year period, it was felt that most of the expected benefits had been achieved.

Annual receipts, expenses, and net income were calculated each year for the entire period. The study showed definitely that a run-down farm can be improved. It also showed that it would be difficult for the average farmer to carry out such an improvement program if he had to depend on farm income alone to finance the necessary operations.

No terracing or contour stripcropping had ever been used on the farm before the soil conservation and improvement program started. Fertilizer applications on grain crops had never exceeded 100 pounds per acre per year. No fertilizer had been used on meadows. Very little if any lime had ever been applied to cropland and meadows. Consequently, timothy was the principal hay crop. Permanent pastures had never been limed or fertilized.

The acreages in various crops were not changed greatly during the 13 years. About 12 acres of corn, 14 acres of wheat, 34 acres of hay, and 36 acres of permanent pasture were grown each year. The remaining 24 acres were devoted to woodlands, farmstead, and miscellaneous uses.

Contour stripcropping was established early in the improvement program. An initial application of lime was made on all croplands, including meadows, at the rate of 4 tons per acre; maintenance applications of 1 ton per

Note:—The author is associate professor of agricultural economics, Ohio State University, Columbus, Ohio.



An improved 120-acre farm in southeastern Ohio that brings in about $2,700 labor income to the operator.



Part of a run-down farm in southeastern Ohio that brings in a labor income to the farmer of about $400 per year.

acre were made every 4 years thereafter. Fertilizer was applied to corn at the rate of 350 pounds per acre. For wheat, 450 pounds per acre were used. Meadows were top dressed with 200 pounds per acre after the first cutting.

On permanent pastures, 3 tons of ground limestone per acre were applied, followed by 1 ton per acre every 4 years. Fertilizer was applied at the rate of 600 pounds per acre every third year.

During the 13-year period corn yields were increased from 50 to 65 bushels per acre. Wheat yields were increased from 22 to 26 bushels. Hay yields were increased from 1 ton of timothy to 2.8 tons of alfalfa, clover, and timothy per acre. The carrying capacity of permanent pastures was almost tripled. The number of dairy cows supported by the farm steadily increased as did the productive capacity per cow.

Income figures for this and other similar farms show an average dairyman could expect to increase his labor income from $400 per year on the run-down farm to $2,700 per year on the improved farm, with prices and production costs calculated on the 1950-54 period. And a topnotch dairyman, selling milk on the grade A market, might increase his labor income to about $5,500 per year on the improved 120-acre farm.

Income figures show that with top grade management, (10,000 pounds of milk per cow and $4.00 net per hundredweight for grade A milk) soil building operations could be financed out of farm earnings in a few years. If labor were allowed no more than 75 cents an hour plus the use of a house, and if capital were paid 4 percent interest, annual cash receipts would exceed annual expenses after the third year. If all capital were owned by the farmer and no interest charge were made for using it, farm earnings would be sufficient to pay the average farm wage rate after the first year.

If increases in inventory are included in gross income, all costs of the soil improvement program could be recovered by the end of the third year. Also, after the third year interest and principal payments on borrowed money could be made out of farm earnings if no more



Typical unimproved pasture (above) where about 4 acres are required to support 1 dairy cow. (Below) An improved pasture where 1½ acres will support 1 cow.



than $2,500 were used annually for family living expenses.

With average management (7,000 pounds of milk per cow and $3.00 net per hundredweight for manufactured milk) about 12 years would be needed before annual cash receipts from the soil improvement program would exceed annual expenses, including charges for labor and 4 percent interest on capital invested. Seven years would be needed if the farmer owned all capital required and charged nothing for the use of it.

About 45 years would be needed to repay all previous costs if management were only average. If $2,500 were used annually for family living expenses, farm earnings would not be sufficient for the average farmer to make payments on interest or principal before the ninth year.

There are several reasons why annual expenses were greater than receipts during the early years of the soil improvement program. Costs of liming cropland were not completely recovered until meadow crops could be produced and then marketed through livestock. Several years were required before benefits of permanent pasture improvement were fully realized. Also, yields of rotated crops did not reach the maximum until the 13th year.

How then can the average farmer finance a major soil conservation and improvement program? He might do it by using capital on which no interest had to be paid. He might use some off-farm income to help support the family during the early years of the program. Also, the level of family living might be reduced to the minimum for a few years.

Yet, most farmers will find that over a long period of time a good soil conservation program will pay off. Soil depletion usually means lower yields, a smaller volume of business, and less income. More soil depletion means greater costs in restoring the productive capacity to a high level. Greater costs mean more financial difficulties, especially for the average farmer who just about breaks even on a good farm. It will be a difficult job to improve the run-down farm. It will be much easier to conserve and improve soil that is already productive. No farmer can afford to let his farm run down.

Oases On The Plains

Water Spreading Makes Green Fields Among the Brown Grasslands of South Dakota.

By JOHN T. LOUCKS

EXCELLENT results are being reported from the use of water-spreading systems over pasture and hay land in western South Dakota. Those who have been practicing this type of moisture conservation are well aware of the benefits. In years of average or above average moisture, it is not so easy to observe the differences in hay or pasture yields; but, during a summer and fall such as in 1956, the value of this practice is clearly visible to all who see the green fields on an otherwise brown, drab landscape.

Water spreading in this area consists mainly of diverting runoff water from spring thaws or flash rains out of draws or creeks and spreading it over grasslands or alfalfa fields. All too often this water just runs down a draw, into a creek, and on down into the main drainage where it is forever lost to the particular land on which it fell.

Why let this water get away? With the installation of a system of dams and spreader dikes and ditches, this water can be spread over a considerable acreage of grass or alfalfa. There the water is stored in the ground for later use by growing plants.

Although there was little or no runoff from snow last spring, and moisture from rains was limited, an area that had received additional water through a spreader system stood out like an oasis. The vegetation was taller and thicker and of a darker green color. The line where the extra water reached was clearly evident. In some sections, the only appreciable amount of hay produced was on areas where water was spread.

Note:—The author is area conservationist, Soil Conservation Service, Rapid City, S. Dak.



Contrast between flood irrigated (right) and non-irrigated (left) mixture of alfalfa and native grass in Meade County, S. Dak.

During the past several years, around 59,000 acres of water-spreading has been installed in the 10 soil conservation districts in southwestern South Dakota. Estimates by Soil Conservation Service technicians, district supervisors, extension agents, and ASC committees indicate that water spreading practices can be applied on another 38,000 acres.

Richard Williamson, a cooperator of the Elk Creek Soil Conservation District, recently spent $225 to build a single ditch to lead water onto rangeland. This was the first step in what will be a rather extensive water-spreading system covering about 200 acres. Enough floodwater was delivered by the ditch to permit Williamson to harvest $1,400 worth of western wheatgrass seed from the flooded area. This was in a pasture that was grazed throughout the growing season. No seed was produced elsewhere in the pasture. After the cattle were removed in the fall, the grass remaining on the flooded area could have been cut for hay.

John Wolken and his sons, Fred and Charles, who live in the same soil conservation district, have been systematically building dikes and ditches for 15 years or more. They have 8 separate systems, utilizing water from most of the draws which cross their land. Through the years they have spent around $6,000 building and maintaining ditches, dikes, and control works to utilize floodwaters on nearly 1,000 acres of range and hayland (both grass and alfalfa).

One fall, Wolken sold 800 tons of hay and 15 tons of alfalfa seed grown on land thus watered. A few years ago, Wolken built a system of dikes and ditches to spread runoff water on about a quarter section of native rangeland. Production the following year was remarkable, the grasses grew thick and tall and stayed green throughout the summer.

A hundred or more yearling steers grazed the area, and they were concentrated on that land when the unwatered grass began to dry and cure in the midsummer heat. The growth was so vigorous that even though the animals spent most of their time on it, the grass was not closely grazed. Production during that year was easily tripled because of the flooding.

Carl Erickson, of Creighton, built a water spreading system in 1951. The original cost of the system was $3,700 and it covers about 100 acres. Enough alfalfa seed is harvested off of the area each year to pay for the initial cost of the layout. In addition, the hay averages about 2 tons to the acre.

W. Nolan, of Buffalo Gap, had tried for years to raise alfalfa seed without much success. Now he has a water-spreading system on 160 acres, and says that his system makes the difference between seed or no seed.

Charles Stearns, of Provo, requested assistance in the development of a water spreading system in 1947. The first consideration was adequacy of water supply for the desired results. Runoff from 8,000 acres of the adjacent watershed were diverted into a diversion dam. The water-supply system was completed in 1947, and twenty-seven 6-inch weep pipes were installed to spill water onto the initial 200 acres of the project.

In 1948, the distribution system was planned and 35,000 feet of ditches, dikes, and a redistribution pickup ditch were completed. This was necessary to get an even distribution of water on the initial 200 acres, to add 200 acres to the system, and to make beneficial use of any surplus water, which runs off from the upper lines of the system. In 1949, 3,250 additional feet of spreader ditch were constructed to complete the project.

The construction work included 10.4 miles of ditches and dikes, with a total of 10,677 cubic yards. Earthwork construction cost $1,281. Gates, turnouts, and weeps were made from old well casings, corrugated pipe, and used lumber. Mr. Stearns also spent $350 for heavy work on repairing the diversion dam and main canal. The water spreading area consisted of native grassland, go-back land, and cropland. The entire area has been seeded to alfalfa drilled in existing cover. Following are some of the yields of hay and alfalfa seed from Stearn's project:

1954—100 tons hay @ $20 ton = $2,000 and 15,000 pounds of seed @ $33.30 cwt = $4,995.
1953—200 tons hay @ $20 = $4,000 and 24,000 pounds of seed @ $18.00 cwt = $4,320.
1952—164 tons hay @ $15 ton = $2,460 and 7,500 pounds of seed @ $35,00 cwt = $2,625.
1951—212 tons hay @ $15 ton = $3,180.

These are only a few of the many instances where operators report outstanding results obtained as the result of establishing water-spreading systems.



Alfalfa field in Meade County, S. Dak., that was irrigated by water-spreading system.



CONSERVATION COMES TO TOWN, by way of an ever-changing newsphoto display in windows of the *Wirt County Journal* at Elizabeth, W. Va. Fred Sturm, local businessman shown above, is among the hundreds who stop for a regular look at the latest nearby soil and water action. Schoolchildren, according to Editor "Woody" Wilson, watch the displays closely for a view of their own or neighboring farms.

The photos are also featured in the *Journal's* news coverage of doings in the Little Kanawha Soil Conservation District. Displays are arranged by Ross Mellinger, SCS work unit conservationist.

INCENTIVE AWARDS.—During the fiscal year 1957, incentive awards totaling $71,618 were given to 611 SCS employees. Of these, 209 were given for suggestions accepted, 370 for sustained superior performance, and 32 for special acts or services.

Tall Wheatgrass Replaces Foxtail and Kochia

Drainage Plus Tall Wheatgrass Have Brought Alkali Wasteland Back into Production for a Wyoming Rancher.

By HARLAN N. TULLEY

PETE Meike was one of the pioneer settlers and has been ranching in the Powder River country near Sussex, Wyo., for most of his life. Pete has seen the development of irrigated crop and hay land from the native grassland that originally existed on the first bench above the Powder River. Irrigation in the area around Sussex began with the building of the Sahara Ditch in 1902-07. This was the first irrigation to be done along the Powder River below the North Fork. Water was turned through the ditch in 1907.

Irrigation in this area produced bountiful crops for many years, and then alkali began to creep in. Shale parent materials below the soils of the area produced an abundance of alkali salts, which were brought to the surface by deep irrigation. On top of this, natural drainage, provided by buried creekbed gravels under the land, was closed off below. Subsequent irrigation built up the water table. Without an outlet for subsurface water, the land became boggy.

The story that now unfolds is an old one to many people of Wyoming, who can recite the sequence of events that transpired. The story includes infestations of foxtail barley, development of seep areas, "souring" of the land, and finally infestation with kochia, or burning bush.

The early 1920's produced the last good crop of hay on the Meike Ranch. Pete remembers using four horses to pull the empty wagons over the boggy ground to the field stack yard and eight horses to pull the loaded wagons out. Something had to be done to save the remaining land that was still producing a crop.

In 1944, Pete was instrumental in getting the Sussex Drain dug to provide an outlet for the excess water and to help dissipate the alkali

Note:—The author is range conservationist, Soil Conservation Service, Sheridan, Wyo.



Tall wheatgrass growing in a formerly unproductive alkali field on the Meike Ranch.

salts. This slowed the spread of alkali troubles and firmed up the boggy topsoil, but the areas already "alkalied" failed to improve. Pete and his neighbors were still confronted with the problem of trying to raise crops in competition with foxtail and kochia. Kochia came in about 1946 and has spread rapidly since then.

Some kind of hay grass or legume was needed, which would make satisfactory growth under the conditions existing and would compete successfully with the foxtail and kochia. Sweet clover would grow under these conditions, but it was not the most desirable hay. Being a biennial, it required working the soil and reseeding every 2 years creating a weed problem each time this was done.

Pete and his neighbors had the drain ditch deepened to gravel in 1952 making it more effective and far-reaching. At this time, he learned that tall wheatgrass was growing well under similar conditions elsewhere, so he decided to try it. With the advice of Soil Conservation Service technicians, he invested in enough seed that fall to plant about 18 acres. A dry fall, followed by a dry spring and summer, with scant irrigation water, was not conducive to good results. Despite all this, the seed germinated and grew. A good stand of tall wheatgrass resulted on about 13 acres, although there were some thin spots.

The really surprising thing, according to Pete, was that when the kochia came up in July and August it did not smother the wheatgrass. The second year, thirty-five steers were summered from about July 1st on the 13 acres. The thin spots had filled in with tall wheatgrass.

The third year, 13 bulls again summered on this patch, and 208 bushels of seed and about 400 to 500 bales of hay were harvested. Last year, the fourth, 248 bushels of seed were harvested from the grass plus 1,120 bales of hay and pasture for 50 rams from July 1. More land was planted last year with homegrown seed.

Palatability of tall wheatgrass is high as pasture or hay. Pete bales his grass hay and finds that sheep eat it eagerly. The cows eat the hay—stems and all. Sheep do not eat all the stems but do a good job on the leaves. Little waste is experienced in feeding this hay. Pete found that the year he pastured sheep on the



Pete Meike and sons inspecting the Sussex drainage ditch.

grass, the seed crop he harvested was practically weed free. This combination of pasture, hay, and seed production from the same land is ideal for this country.

The P/M brand livestock on the Peter Meike and Sons Ranch benefit from this high-quality feed. Running both Hereford cattle and Columbia sheep, quality of the herd is maintained at a high level, with bulls from registered herds in Nebraska and rams from registered Wyoming flocks. With these high-priced animals, a profit is realized only if the animals are kept in top condition and produce good lamb and calf crops.

When the Powder River Soil Conservation District was organized in the Kaycee-Sussex area to cover the south half of Johnson County



Sheep feeding from tall wheatgrass hay on the Meike Ranch.

in 1955, it was only natural that Pete Meike should be elected to its board of supervisors. The district is now engaged in plans for further improvements that can be made in production techniques and treatment of the land based on soil capabilities.

The pioneering efforts of the Meike Ranch are providing some of the answers that the district needs to solve problems of land treatment. With tall wheatgrass, a proved forage plant for the area, many acres abandoned to alkali and seeps may now be used for pasture and hay production. There is much hope that the next generation of ranchers will find things a lot easier along Powder River. Improved crop varieties and better understanding of proper land treatment indicates that these hopes can become reality.

Taming Wild Arroyos

Floodwater-retarding Structures at the Mouths of Arroyos Protect Irrigated Valley Lands.

By R. A. YOUNG

As long as men have been farming the fertile valley of the Rio Grande in New Mexico, they have been plagued by floods originating in the hill lands. In the Hatch area, in the southern part of the State, such floods have been especially troublesome.

Here, as in many other parts of the valley, irrigation farming has been highly and expensively developed. Crops of corn, cotton, hay, and vegetables grow with vigor in the rich soil, aided by a warm sun and irrigation water at the right time.

In the Hatch area, the arroyos seem to be pointed at the farmlands to the west like a battery of cannons. Sudden rainstorms high up on the slopes 5 miles distant always brought trouble to the valley.

Note:—The author is State conservationist, Soil Conservation Service, Albuquerque, N. Mex.

At such times, the floodwaters burst out of the arroyos and fan destruction over the valley lands, sweeping over growing crops and dumping charges of gravel and sediment into irrigation systems. Proper grazing management of the hill lands wasn't enough; too much of the land was so steep and rocky that runoff could not be controlled by vegetation.

Farmers of the Hatch area in recent years had accomplished much in their effort to stem the rush of water from the arroyo slopes. Singly and in groups, using Federal and other help available at the time, they brought some of the arroyos under at least partial control.

However, much more needed to be done. The Watershed Protection and Flood Prevention Program, set up by Congress in 1954 with Public Law 566, provided the opportunity. This law makes it possible for the Department of Agriculture to cooperate with local organizations in solving watershed problems.

Completion of the first in a series of floodwater-retarding structures, the one spanning the "muzzle" of North Salem Arroyo, has been a milestone of a kind in watershed history.

The North Salem Dam, with its ungated outlet for the orderly release of floodwater, represents the first "sealed and delivered" contract under the new National program.

Two other floodwater-retarding dams now have brought needed protection from Ralph and Garfield Arroyos in the Hatch Valley Arroyos watershed-protection and flood-prevention project.



Silt collected above the North Salem Arroyo floodwater-retarding dam.



Upper side of the North Salem Arroyo floodwater-retarding dam soon after completion.

The Caballo Soil Conservation District lost no time in applying for help under the new watershed program. It promptly addressed a letter on November 4, 1954, to Governor Edwin Mechem asking for development of a plan for about 15 of the small arroyos that menaced valley lands.

When the district was formed 15 years ago, it cited the need for arroyo flood control as one of its most important objectives. Work that already had been done toward this goal carried much weight when the application for help by the Soil Conservation Service went forward.

Chairman Glen Ratliff, of the Caballo Soil Conservation District Board of Supervisors, outlined the problem this way:

"Most of the damage from arroyo water comes from the smaller arroyos, which simply end at the valley floor. When heavy equipment became readily available after World War II, farmers began leveling all their lands for irrigation. This had the effect of filling in many of the natural drains from the arroyos. The water now spreads over larger areas, heaping soil deposits and building fans. This new program is giving us the help we needed to go on with our job. We had done all we could."

The three completed structures have already started paying on the investment. Garfield Dam had four "runs" from summer storms.

The farm of Albert Franzoy, secretary-treasurer of the Caballo Soil Conservation District, is below one of the still-untreated arroyos. A July rain sent runoff dashing down the slopes onto Franzoy's place. His onion crop was damaged despite Franzoy's haste in getting the water off the field with big pumps.

"It never rains here but it pours," Franzoy sighed. "We need these retarding dams more than ever now."

The first 6 dams in the Hatch Valley Arroyos project represents an overall cost of $230,000. Damages, surveys show, have been averaging $14,111 a year. On a 50-year basis, benefits will outweigh costs 2 to 1.

As sponsoring agency, the Caballo Soil Conservation District is responsible for maintenance of the work. However, because of the program's importance to irrigation, the Elephant Butte Irrigation District has shouldered the upkeep burden and worked out an agreement with the Bureau of Reclamation for most of the actual work. The upkeep cost of the 6 structures in the Hatch Valley Arroyos project is estimated at $1,500 a year.

Work plans have been approved in Washington, D. C., for the remaining three retarding dams in the Hatch Valley Arroyos project. These are for the Velarde, Rodey, and Reed-Thrumond Arroyos.

Five other arroyos, the Underwood, Wasson, South Salem, Wardy-Hedgecock, and Hammett, are being planned for watershed treatment as the Caballo Arroyos project. A Soil Conservation Service survey and planning party is at work on them.

Grass-Seed Farmer

Grass Crops, Pine Trees, and Cattle Supplant Cotton and Corn and Prove to be More Profitable on a South Carolina Farm.

By J. B. EARLE

EVEN the nooks and corners are used wisely and treated well on the C. B. Reid farm in the Chester County Soil Conservation District, S. C. Last year Reid planted all odd corners and areas to pine.

Mr. Reid has for many years been following a soil- and water-conservation plan for his farm, which he prepared with the help of SCS technicians. The encouraging thing to him is that he now has most of his soil covered most of the time.

He grows crops in rotations and in combinations, and he is planning to overseed old stands of sericea lespedeza with fescue, ladino clover, and crimson clover. This combination will cash in on the fertility put into the soil by the sericea.

"You can grow anything you want in the summer following crimson clover," Reid said. He is a great believer in the two soil builders, sericea lespedeza and crimson clover.

"There was not a fence on this farm 10 years ago excepting one for a small hog pasture. It was a cotton and corn farm—no grass and no cows. Now it's a cattle and grain farm," he said.

Reid went into the lespedeza seed business in 1949. Since then lespedeza has been decreased. Now clover, ryegrass, fescue, Bahiagrass, rescuegrass, soybeans, millet, grain sorghum, and small grains are his main crops. He produces seed of all of these crops on his own farm, excepting rescuegrass. His most recent seed crop is Pensacola Bahiagrass. He planted a 2-acre seed patch of it last February with registered seed.

"There is a noticeable difference in the appearance of grain that follows soybeans," Mr. Reid said. "The extra nitrogen put into the soil by soybeans really makes grain grow, but I have to add some additional potash since the beans are heavy potash users."

Note:—The author is assistant State conservationist, Soil Conservation Service, Columbia, S. C.

The change has been from row crops to cows and conservation. His cotton allotment now is 21 acres, all of which is in the "Acreage Reserve" of the Soil Bank. He grows only one-fourth acre of corn in the garden. Small grain takes the place of corn. He likes it this way because small grain can be handled with machinery. It also grows in the winter when moisture is usually available and it protects the soil better than does corn.

As row crops decreased, grass and cows increased. He now has 50 Hereford cows and calves. His goal is 100.

"Fertilizer without good soil condition is useless. If the ground doesn't 'give' when you walk on it then it is too hard and needs organic matter," he said. The organic matter on this farm comes from grass, legumes, manure, and grain straw. No straw is burned; all of it is returned to the soil.

Reid owns 415 acres and rents 45 from his mother—260 acres of these are in pasture and seed crops. The other 200 acres are in loblolly pine.

Fred Mack, a consulting forester from Fort Mill, marks the trees when they need thinning. The stand is being managed for sawtimber by thinning as needed and by releasing the young pines by girdling scrub hardwoods.

Even the small bare spots of land on this farm



C. B. Reid and part of his cattle herd in an improved pasture.

are mulched with some type of straw.

Charles B. Reid, his wife, and their two daughters live in a modern home built in 1955. They enjoy beef from the farm and other fruits of their system of farming. He is not only active on his own farm but he is active in most community and county affairs.

"Progress is being made from the old ways to the new on my farm and in this community. It is hard to make a living from good yields and impossible to make a living from poor yields. Proper use and treatment of land are essentials if good yields are to be made," he believes.

"Two of the organizations that I represent—the Chester County Soil Conservation District and the Chester County Farm Bureau—are actively promoting a watershed-protection and flood-prevention project on the Rocky Creek Watershed in Chester County. The purpose of this project is to do a good job of using soil and water resources on all farms in the whole watershed area. In addition to conserving the farms, we hope to clean out the stream channels, stabilize road banks, and build flood-water-retarding dams," he said.

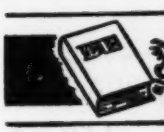
"This is a critical time for farmers in my area. While it is not a depression, there is a cost-price squeeze inflation that is putting farmers in a financial strain. I firmly believe that the farmers who survive this period will be those who have had a good conservation program on their farms for many years and who are now endeavoring to continue wise use of their soil and water. We need to produce more per acre at less cost.

"In 1946, I planted 100 acres of cotton and had 9 families of sharecroppers on the farm. Now I have no sharecroppers. I would not think of going back to the system I was following 10 years ago. The future looks better than the past," Reid concluded.

NITROGEN IN CORNSTALKS.—Cornstalks can be a valuable source of nitrogen, according to Fred E. Koehler, ARS agronomist, at the Scotts Bluff, Nebr. experiment station.

From 20 to 52 pounds of nitrogen per acre were found in the cornstalks and leaves in 5 fertilizer experiments on irrigated corn. The amount of nitrogen was influenced by the available nitrogen supply in the soil and the rate of application of nitrogen fertilizer.

Nebraska Experiment Station Quarterly



REVIEWS

AMERICA'S NATURAL RESOURCES. By Charles H. Callison. 211 pp. 1957. New York: Ronald Press Company. $3.75.

HERE is a new book which the publisher correctly says, "Will be valuable to readers in many situations—to the voter, the farmer, the teacher, the legislator, the leader of public opinion. It is essential reading for all who have glimpsed the dangers threatening natural resources and wish to take intelligent action in their defense on community, State, or National level."

In sponsoring this book, the National Resources Council of America has rendered a real service to the American citizen. The contributors are a group of literary scientists who have conveyed their ideas objectively in a pleasing manner that can be understood by the general public. The authors assigned to write the various chapters are:

1. Conservation—Shirley W. Allen
2. Renewable Resources and Human Populations—Fairfield Osborn
3. Soil—Firman E. Bear
4. Water—H. G. Wilm
5. Grasslands—David F. Costello
6. Forests—Henry Clepper and Lowell Besley
7. Wildlife—Joseph J. Shoman
8. Fish—Albert Hazzard and William Voigt, Jr.
9. Parks and Wilderness—Howard Zahniser
10. Land Use Principles and Needs—Edward H. Graham
11. Needed: A Natural Resources Policy—Ira N. Gabrielson

This volume is an excellent source book—a depository of fundamentals and facts about our natural resources and what American civilization has done to them. It is deeply objective—resources are enumerated, destruction is evaluated, need is reckoned with, and sound methods by which our resources may be preserved are set forth.

—B. W. ALLRED

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SOIL SAVERS: The Work of the Soil Conservation Service. By C. B. Colby. 48 pp. Illustrated. 1957. New York: Coward-McCann, Inc. $2.00.

THIS is the most recent book in the Colby series that deals with important and interesting matters affecting American life. The entire book is devoted to soil conservation and the SCS. It is essentially a picture book developed along the lines of many children's books, with more than half the space devoted to pictures. Yet, it is very interesting and informative to adults.

Subjects discussed include most phases of soil and water conservation, from soil surveys and contour farming to flood detention dams and watershed treatment.

This book should find a place in all school libraries, and is one that might well be read by many conservation farmers and professional conservationists.

—TOM DALE

SOIL-PLANT RELATIONSHIPS. By C. A. Black. 332 pp. Illustrated. 1957. New York: John Wiley & Sons, Inc. $7.00.

DR. BLACK has converted to book form subject matter used in his course on soil-plant relationships at Iowa State College. The content is well-oriented and according to the author intended for students with considerable knowledge of soils, plant physiology, and general sciences.

The salient features of soil-plant relationships are explored with particular emphasis on the chief function of the soil matrix to supply needed mineral nutrients, moisture and oxygen, and anchorage for roots of higher plants.

Dr. Black points out that the principal scientific problems in the field of soil-plant relationships are those of measurement and interpretation. He adds that the basic conditions that affect the growth of plants must be measured, and the measurements then must be integrated in the proper manner to obtain an index to response of plants. The author's major emphasis is on measurement, and he has given readers a scholarly evaluation of this phase of the problem as he views it.

Modern concepts of soil chemistry and soil physics are projected to give a general knowledge of soil-plant relationships which can be applied in analyzing and interpreting specific situations. Overall principles and concepts have been put forth, and results of applied work are referred to only as examples. The book title could well be "Soil-Plant-Water Relationships" because of the large amount of excellent information on water as it is related to soil and vegetation.

—B. W. ALLRED

INFORMATION CONTEST.—The first annual soil conservation information contest for soil conservation districts will be held in Oklahoma during the calendar year 1958. The Oklahoma Press Association and Oklahoma Association of Soil Conservation Districts are the sponsors.

The 87 districts in the State are grouped according to the number of newspapers and magazines published in a district. Groups range from districts served by only 1 newspaper to those having 5 or more. Points will be given for feature stories, editorials, sponsored ads, district news columns, and scrapbooks. Plaques are to be awarded the winners in each group.

SMART OXEN.—Senor Placido Colon, a conservation-minded farmer in Puerto Rico, rents a team of oxen to neighboring farmers for plowing their land. But, Placido rents these oxen only to farmers that plow on the contour. He says his oxen do not know how to work the land excepting on the contour.